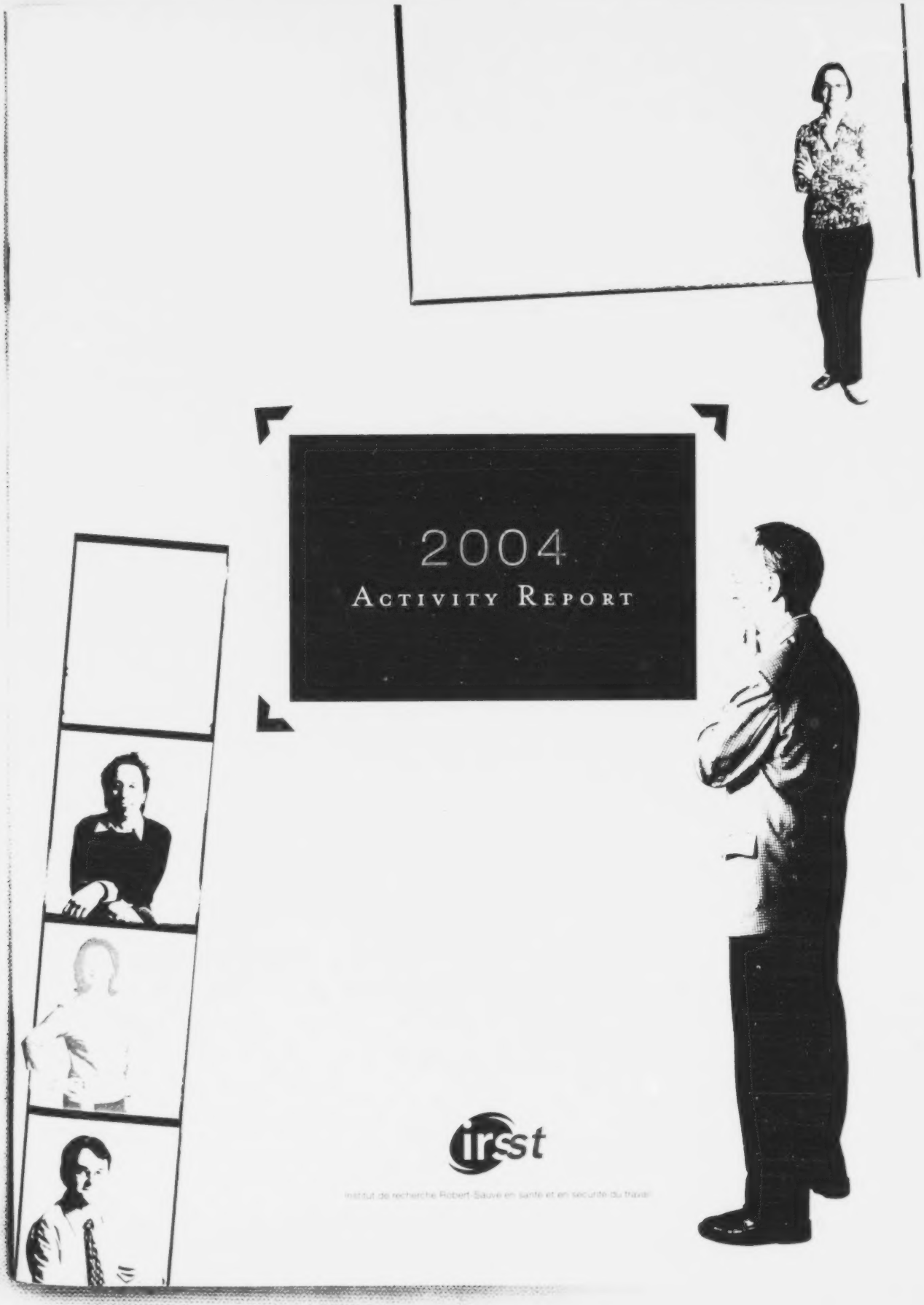

2004
Activity Report

irsst

Institut de recherche Robert-Sauvé en santé et en sécurité du travail

105-04925/

DECLARATION OF DATA RELIABILITY

As president and CEO, I am responsible for the information contained in this activity report. I attest to the accuracy of the information and the reliability of the controls carried out.

Recommended by the members of the Scientific Advisory Board and the Board of Directors, this 2004 activity report faithfully describes the mission, vision and main achievements of the Institut de recherche Robert-Sauvé en santé et en sécurité du travail (IRSST). It sets out indicators selected to assess production and provides accurate and reliable data on the results obtained.

I declare that I have every reason to believe that the facts and data provided in this activity report correspond to the situation as at December 31, 2004.

Diane Gaudet

President and CEO, IRSST

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Message from the President and CEO

Looking back on the year 2004, I realized that most of our achievements are based on the specificity of the Institut de recherche Robert-Sauvé en santé et en sécurité du travail (IRSST). Both a research centre and funding agency, the IRSST has a strong internal team of scientists and technicians but can also draw on a vast external pool of researchers, mainly in universities. This unique characteristic allows the IRSST to rely on diversified and highly qualified resources, while benefiting from cutting-edge expertise, when necessary, in order to better respond to emerging problems in the workplace.

In addition, this special feature also has a definite influence on the variety and volume of our scientific and technical activities, as evidenced by the performance indicators of the past year, not to mention the synergic effects of this internal/external grid.

The same phenomena are measurable when we evaluate the results of our partnership business plan, which has added nearly $7 million to our research capacity since 2003. For every dollar that we invested in projects with partners, we generated over five dollars, increasing the money earmarked for OHS research, without requiring additional cash injections from our funding bodies.

PARTNER MORE AND MORE

By combining the advantages of insourcing and outsourcing, networking, and partnerships, the IRSST can finance more projects, further diversify its production, and deliver more useful results to workers and companies in order to prevent occupational injuries. This practice is neither a trend nor an obligation. Since its founding in 1980, the IRSST has always felt that the partnership approach was a winning formula. Twenty-five years later, the IRSST can take pride in having made an eminently daring strategic choice, but so rewarding from every perspective that today it would be difficult to conceive of a research world without partnership.

LABOUR MANAGEMENT COOPERATION SINCE THE BEGINNING

Our research projects are not only numerous and diversified, they originate by virtue of their relevance and importance. Moreover, these properties are largely attributable to labour-management cooperation, which is another unique feature of the IRSST. Whether through our authoritative bodies, such as the Scientific Advisory Board or the Board of Directors (I salute its new chairman, Gérard Bibeau), with the Commission de la santé et de la sécurité du travail (CSST) or the joint sector-based associations, or even within the follow-up committees for most of our projects, labour-management cooperation is an indispensable asset in the achievement of our objectives. The participation of employer and union representatives in the IRSST's scientific life is an added value that promotes the identification and decoding of true workplace needs, creative problem-solving and better knowledge transfer. Labour-management cooperation is the guarantee of applied research and the conversion of results into useful and practical solutions for Québec workers and companies. The bipartite model supports our activity, particularly when research must help solve delicate problems, such as occupational psychological health, or implement a strategy for developing research on young people and OHS. For us, labour-management cooperation is an indispensable, appreciable value to which the entire organization adheres and that differentiates us from all other research centres.

PREVENTIONIST EVERY DAY

In OHS, the field of action is broad and the needs are many. Without neglecting persistent problems, the IRSST must remain vigilant in order to foresee new risks emerging on the horizon. This reality led the IRSST to reflect on its future as part of a strategic positioning exercise, an initiative that allowed us, in 2004, to question the manner in which we are fulfilling our mission's objectives. In this regard, we took our external environment into account, identified the expectations of our many partners, and assessed our organizational capacity. And since we are confident and proud of what has been accomplished, an external evaluation committee was given the mandate of determining what the IRSST has achieved over the past few years. I would like here to underline the strong interest that the outgoing chairman, Jacques Lamonde, showed in this strategic orientation process. On behalf of the personnel, I thank him sincerely for his constant support to the IRSST and its operations.

On the eve of our 25th anniversary, we are in the process of establishing a strategic development scenario that will meet the expectations of our environment. One thing is certain, even if the level of occupational injuries is still too high, I am deeply convinced that research continues to be the engine driving every action that will help us eliminate risks to the health and safety of Québec workers at source.

Diane Gaudet

President and CEO

2004

199 projects were active in 2004*.

59 files were completed.

55 files were approved, broken down as follows:

- **27** joint
- **16** external
- **12** in-house.

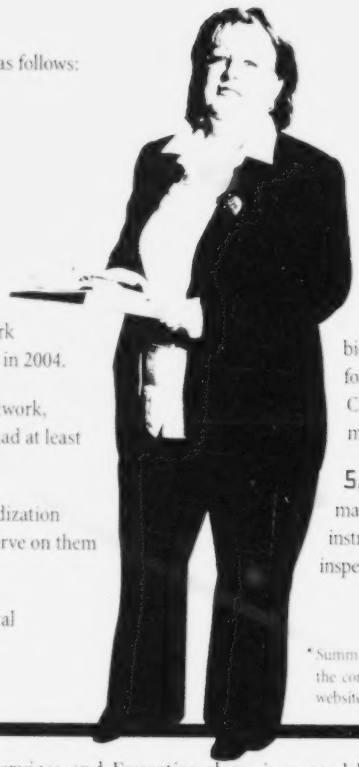
62 other projects were being developed.

98 partner organizations in the network were involved in the active projects in 2004.

34 committees of the CSST and its network, including regulatory committees, had at least one IRSST representative.

16 national and international standardization committees invited the IRSST to serve on them in an expert capacity.

36 scholarships were awarded for a total of $409,400.*



60,508 environmental, toxicological and microbiological analyses were done, **85 %** of which were for our partners in the prevention-inspection network: CSST, local health and social services network development agencies and joint sector-based associations.

5,548 hours were devoted to the calibration, maintenance and repair of direct-reading and sampling instruments, **84 %** of which were for the prevention-inspection network.

* Summaries of all projects carried out or funded by the IRSST, as well as the complete list of scholarship recipients, are available on the IRSST's website: www.irsst.qc.ca.

The production of Laboratory Services and Expertise alone increased by 11% compared with the previous year. Laboratory Services and Expertise mainly serves specialists in the Québec occupational health and safety network, under a service contract between the CSST and the IRSST that does not prohibit client prospecting. Thus, 10 new clients became users of our environmental, toxicological or microbiological analyses. This indicator attests to the quality of the laboratories, which is confirmed by numerous national and international certifications, as well as the interest that the often unique expertise of Laboratory Services and Expertise holds for our clients and partners. Moreover, Customer Service – Laboratories has been reorganized in order to better receive, process and follow up on the many requests transmitted to these industrial hygiene specialists.

67 IRSST publications:

- **65** research reports and guides published by the IRSST
- **2** synthesis reports published in collaboration with partners.

105 scientific publications *(reading commitees)* related to projects carried out or financed by IRSST:

- **44** periodical articles
- **39** articles published in conference proceedings
- **22** other publications, including book chapters, theses, etc.

127 presentations given by IRSST personnel or funded researchers at scientific conferences or events organized by partners.

8 courses given by IRSST personnel during training sessions organized by our network partners, universities and research collaborators.

26 non-technical articles published in *Prévention au travail*, the magazine published by the CSST and IRSST, with a circulation of over 45,000.

6,945 publications distributed in response to requests.

41,827 downloads of research reports from the IRSST's website.

324,464 visits to the IRSST's website, representing an average of 887 visitors per day.

3,500 subscribers periodically receive news related to laboratory activities, new research projects and the latest publications via the electronic newsletter *Info IRSST* prepared by the Communications Division.

WWW.IRSST.QC.CA

In order to make its scientific and technical production as accessible as possible, the IRSST launched a second-generation website. Featuring an enhanced content and a high-tech search engine, this new site contains over **10,000** html pages and **1,000** documents that can downloaded free of charge.

RELIABLE STATISTICS

At the request of the Communications Division, which wanted to have more effective tools at its disposal, two types of transaction journal analysis software adapted to our needs were identified and reconfigured in order to obtain the most accurate and realistic evaluation possible of traffic on the site. By perfecting the evaluation method, all visits made by robots or search engine hackers, which artificially inflate the number of visitors to any website, were subtracted from the calculation of visitors frequenting www.irsst.qc.ca. A total of 350 robots were listed, 85 of which systematically came on our pages to index the content, which may represent up to 60% of the traffic.

Statistics related to the downloading of pdf documents were also condensed. From now on, only documents that have been fully downloaded will be taken into consideration. Despite this purging, no fewer than **41,827** research reports were downloaded during the course of the year.

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2004 HIGHLIGHTS

PRODUCTIVE PARTNERSHIPS

Due to the numerous effects that partnerships can generate, the IRSST has long encouraged them as a preferred method of increasing its research capacity and multiplying the scientific results. Aware of the limits of its human and financial resources, the IRSST set itself the objective, in its 2003-2005 corporate plan, of "structuring and systematizing its actions in order to increase research partnerships." We thereby wanted to promote a sharp increase in the joint financing of projects, scholarships or programs, with a target of $1 million as the external contribution for 2004.

OBJECTIVE EXCEEDED

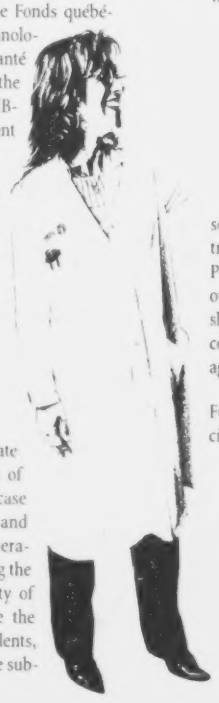
The results were greater than expected. Since the adoption of the business plan aimed at increasing research partnerships in 2003, eight projects totalling over $8.2 million, of which $6.9 million was paid by our partners, have been approved. For 2004 alone, no fewer than 15 partnership-based research projects were active. The partners' financial contribution stood at $2,246,888, or more than double the established objective, while the IRSST's share amounted to $437,490. By the time they are all completed, these 15 projects will represent a cash injection of $8.4 million from partners and $1.7 million from the IRSST.

The IRSST's main partners were: the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC), the Fonds québécois de la recherche sur la nature et les technologies (FQRNT), the Fonds de recherche en santé du Québec (FRSQ), the HEALNet network, the Workplace Safety and Insurance Board (WSIB-Ontario), and the Research and Development Institute for the Agri-Environment (RDIA).

These partnerships mainly allowed the IRSST to participate in the creation of two research centres, one on health and safety in agriculture, and the other on occupational asthma, two fields in which the IRSST has done considerable work.

OTHER RESULTS

Non-financial partnerships can also generate major results in terms of the development of new knowledge and networking. Such is the case with the association between the IRSST and INRS-France, which led to three specific cooperation agreements. The first aimed at improving the ergonomics of forklift trucks and the safety of operators, since forklift truck rollovers are the cause of many serious and even fatal accidents, and the risks associated with their use are the subject of research in both France and Québec.



The second involved the prevention of musculoskeletal disorders (MSD), which still represent more than one third of occupational injuries in Québec and nearly 40% of the CSST's compensation costs. The two institutes want to jointly produce and publish documents promoting research results, encourage the appropriation of successful prevention experiences, and consider the implementation of a mechanism for coordinating research programming.

The third agreement dealt with processes for assessing the risks associated with industrial machines. Even though hazardous situations involving machines cause numerous accidents, few tools and guidelines are available to companies to facilitate risk analysis. In addition to promoting the sharing of resources, this agreement will encourage the pursuit of research projects and the development of a program on risk assessment methods.

The IRSST and INRS-France had already signed a partnership framework agreement in 2003 to jointly carry out research work and more in-depth exchanges.

AND A NETWORK

As a beneficiary of collaboration between the IRSST and Québec's main funding agencies, namely the Fonds de la recherche en santé du Québec (FRSQ), the Fonds québécois de la recherche sur la nature et les technologies (FQRNT) and the Fonds québécois de la recherche sur la société et la culture (FQRSC), the Réseau de recherche en santé et en sécurité du travail du Québec (RRSSTQ) continued its development work. Its director, Jean-Pierre Brun, presented the main strategic orientations that will guide the network over the coming years. Comprised of about one hundred researchers, this network should support scientists by bringing them together in order to increase their competitiveness so as to obtain research grants from federal or international agencies.

Furthermore, the IRSST continued its efforts to be recognized by funding agencies as a partner eligible for grants.

Some initiatives over the months

01 January

- In response to an invitation from Diane Gaudet, the executive directors of the joint sector-based associations gathered together to discuss the IRSST's research program and emerging problems.

02 February

- The IRSST's new Web site was launched. With an enhanced content and more effective technique, the second generation of www.irsst.qc.ca offers Internet users, clients and partners more than 10,000 HTML pages and approximately 1,000 documents that can be downloaded free of charge.

- The *Guide d'ajustement des valeurs d'exposition admissibles (VEA) pour les horaires de travail non conventionnels* (Guide for the Adjustment of Permissible Exposure Values (PEV) for Unusual Work Schedules) was updated. This guide, mentioned in the *Regulation respecting occupational health and safety*, was published for the first time in August 2001. The computer utility, available in French and English in the Toolbox subsection of the Laboratory Services section on the IRSST's site, already integrated these modifications.

- In partnership with Éditions Multi-Mondes, the IRSST announced the reprinting of the book entitled *LATR: les lésions attribuables au travail répétitif* (*Work-Related Musculoskeletal Disorders (WMSDs): A Reference Book for Prevention*). Published for the first time in 1995, this scientific work became a best seller that led to an initial reprint in 1996. Not only does this second reprint meet the continuing demand, but the interest it is generating shows that musculoskeletal injuries remain a major occupational health and safety problem.

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FORMALDEHYDE

In Québec, nearly 150,000 workers are potentially exposed to formaldehyde vapours. In response to a request from the CSST's technical committee on Schedule I of the *Regulation respecting occupational health and safety*, which wanted to know the health and socio-economic impacts of a reduction in the current permissible exposure value (PEV) for formaldehyde, the researchers evaluated the exposure of workers to this colourless, irritant gas. A group of scientists dissected over 900 documents and consulted numerous data bases. Measurements were taken in 55 establishments, which resulted in more than 1,600 samplings in workers' breathing zones or in the ambient air.

This important project led to the publication of a dozen original studies on formaldehyde. Five teams of researchers, under the supervision of Nicole Goyer, conducted an impact study related to worker exposure in different economic sectors divided in three groups, based on the probability and extent of exposure to formaldehyde. Using the documentation on the exposure of Québec workers, the acute, subacute and chronic effects of formaldehyde exposure on human health, and the costs of a respiratory protection program and technical controls, mainly ventilation, the researchers evaluated the consequences of a reduction in the PEV for the fibreboard manufacturing industry, other wood industries, the wood furniture manufacturing industry, formaldehyde and formaldehyde-based resin manufacturing industries, foundries, pathology laboratories, the funeral services industry, the textile finishing industry, the plastic processing industry, and for a group of 22 less exposed sectors.

For the most exposed groups, this important documentation:

- validated the economic sectors where this compound is actually used;
- identified the establishments and estimated the total number of exposed workers;
- evaluated exposure concentrations according to profession;
- constructed job/exposure and establishment/exposure matrices (templates) by economic activity sector;
- gathered information on exposure determinants and formaldehyde emission sources;
- considered corrective measures, means of protection and the related costs;
- predicted the theoretical percentage of workers who would have eye, nose and throat irritation based on concentration.

The large amount of information gathered from establishments significantly increases our knowledge of worker exposure to formaldehyde and will help the review committee come to a decision regarding the PEV for formaldehyde. While promoting action in the area of prevention, this project will also make it possible to develop a more refined impact-study methodology.

MANGANESE

After having summarized scientific knowledge on the health risks following occupational exposure to manganese, particularly in terms of the central nervous system, the IRSST tackled the question of medical diagnosis. In order to respond to the concerns expressed by the CSST's Prevention Inspection Branch, the IRSST organized two meetings with the members of a committee of international experts on manganese. These meetings brought together five experts as well as representatives of the CSST, the health network and the IRSST, and provided an opportunity to establish criteria for harmonizing everything related to the medical diagnosis of manganism. Given the gradual development of this occupational disease, this issue remains complex. The preliminary results of this undertaking were presented at a colloquium organized by the IRSST in February 2004.

In the meantime, various committees on manganese are continuing their work, which will lead to a proposal for reviewing the exposure standard in the *Regulation respecting occupational health and safety (RROHS)*. Described as original and innovative, the Québec approach was presented upon invitation at an international colloquium on exposure to manganese during welding operations and should be the subject of an article in an international journal.

Scientific research is useful insofar as its results are transferred to the workplace, thereby helping to eliminate hazards at source and prevent accidents. Wanting to share its expertise with its partners, the IRSST has always given priority to knowledge transfer and the appropriation of scientific results. In some cases, research results are adapted into guides, technical data sheets or more user-friendly tools, which facilitates transfer.

CONVEYORS

Among the successes in the area of transfer and promotion, two guides on belt conveyor safety are now available. Produced by the CSST, with the invaluable scientific support of the IRSST's Safety Engineering team, the first is aimed at users, while the second, developed to eliminate hazards at source, is intended for designers. Abundantly illustrated and easy to consult, the user guide is intended to increase the safety of conveyors, which are the cause of numerous accidents. This guide informs workers, foremen and belt conveyor users about the process of assessing and reducing risk. It describes hazardous phenomena and documents the protective measures to be implemented during production and maintenance operations. With a circulation of 5,000, this guide is a reference work that has inspired many colloquia and conferences.

The second guide sets out the design principles for improving conveyor safety. It highlights the effects of design choices on safety, and illustrates, in the form of a fault tree, the events that can lead to accidents. The guide mainly reminds designers that the ideal opportunity for ensuring that all safety elements are integrated into a conveyor is at the time of purchase.

The quality and originality of these products has much to do with the fact that the Industrial Accident Prevention Association (IAPA), an Ontario prevention agency, showed interest in having the user guide translated into English for purposes of training workers and preventionists.

TRAINING INSTRUCTORS...

To properly meet the growing demand for training on the analysis of risks associated with machines and on means of protection, the IRSST has been involved, over the past two years, in a competency transfer project. The purpose: to transfer knowledge acquired by researchers in order to ensure that a greater number of intermediaries can, in turn, train industry personnel. This knowledge mainly involves theory and risk analysis methods as well as viable technical methods for reducing hazardous situations that result in accidents.

Partners from joint sector-based associations, the Mechanical Engineering Department of the Université de Sherbrooke, and specialized companies carried out interventions in the workplace to provide training, with the help of learning tools developed by the IRSST and the support of its researchers. These interventions made it possible to train over 560 industry personnel and 300 mechanical engineering students. In addition, this initiative prompted the Université de Sherbrooke to revise the content of seven mechanical engineering courses to include concepts of risk analysis and machine safety, thereby better preparing students to take OHS into account in their future careers.

SLIPPERINESS OF FLOORS

Each year, falls due to slipping cause nearly 7,000 accidents in Québec companies and cost the CSST $25 million in compensation. It is not surprising that, since 1997, the IRSST has financed several field and laboratory experimental projects aimed at establishing the optimal conditions for using floor cleaners. Given the frequency of injuries and the number of companies and workers concerned, more popularized products have been developed to make research results more accessible to non-scientific users. Consequently, a technical data sheet was published providing a condensed, informative summary of all research activities. In addition, a training CD, *Attention! Planchers glissants (Watch Out! Slippery Floors!)* was produced, which included an interactive game to raise the awareness of young workers exposed to the risk of slipping and falling on the same level, particularly in the food service industry. Lastly, the launching of a website http://www.qinc.ca/entretien/index1.html on maintenance for the prevention of slip and fall accidents has made this knowledge widely available.

03 March

- About 50 people (physicians and hygienists from the occupational health and safety network, and researchers) responded favourably to an invitation from **Claude Ostiguy**, the Assistant to the Operations Division Director, to participate in a mini-colloquium to take stock of the scientific knowledge on manganese.

- During a scientific forum on Chemical Substances and Biological Agents organized by **Chantal Dion**, Dr. Lee Newman, pneumologist at the National Jewish Medical and Research Center in Denver and a specialist in beryllium-related diseases, gave a lecture to occupational physicians and nurses in the public health network and the private sector, as well as to pneumologists.

04 April

- An IRSST scholarship recipient, **Anabelle Vinu-Guay**, received the award for best thesis from the Social Science Faculty of Laval University for her master's thesis entitled: *La pratique d'intervention ergonomique mise en œuvre dans le cadre d'un projet de certification à la norme ISO 9001* (The practice of ergonomic intervention implemented as part of an ISO 9001 certification project).

- In conjunction with other organizations involved in occupational health, the IRSST lent its support to the Centre de recherche et d'intervention pour le travail, l'efficacité organisationnelle et la santé (Criteos), launched under the direction of Estelle Morin. The IRSST's support signals the important role such a centre plays in solving psychological health problems and the resulting absenteeism.

- **Nicole Goyer** was put in charge of the IRSST's Chemical Substances and Biological Agents research field. A chemist and industrial hygienist accredited by the American Board of Industrial Hygienists, Nicole Goyer continues to be the director of the Occupational Hygiene Team.

- The IRSST helped set up a research centre on health and safety in agriculture, an initiative of Dr. James A. Dosman of the University of Saskatchewan, and Dr. Yvon Cormier of Laval University, supported by the Institute of Population and Public Health of the Canadian Institutes of Health Research (CIHR). Researchers at Queen's University in Ontario are also involved. This collaboration allows the IRSST to benefit from the expertise of a greater number of scientists and to broaden its field of action in order to improve conditions for agricultural workers.

- The IRSST joined the scientific and teaching community of the Université du Québec à Montréal (UQAM) in congratulating Nicole Vézina, the first recipient of UQAM's Société et savoirs award, which underlines commitment and research work on the problems and the evolution of society. A professor in the Kinanthropology Department and UQAM's GM Chair in Ergonomics, Nicole Vézina was one of the very first students to benefit from an IRSST scholarship in the early 1980s. This collaboration has continued for over 20 years in some 10 research projects financed by the IRSST.

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In tune with needs

Over the past few years, the working community has undergone profound change, which has led the IRSST to refocus its efforts on Québec priorities and adjust the orientations of its research fields. With the shift in economic activity from the resource and processing sectors to the service sector to the aging of the workforce, from the precariousness of the job market to the absenteeism caused by stress at work, the research community must be able to observe and decode these trends and propose solutions. These changes oblige the IRSST to frequently adapt its research programming and to get in tune with workplace needs. This is the case mainly for psychological health and for young people at work.

OCCUPATIONAL PSYCHOLOGICAL HEALTH

The problem of occupational psychological health (OPH) is far from new, but it is clearly emerging as an inescapable issue both for workers and employers and the research community. Stress and occupational burnout, as well as the physical, psychological and behavioural reactions that this type of injury generates, are a major source of concern for organizations which, both in Québec and elsewhere in the world, are often unequipped to handle it.

One thing is certain, OPH must be dealt with! This is basically the conclusion arrived at by participants attending a workshop on mental health in the workplace held in Toronto. Organized by the CIHR and sponsored mainly by the IRSST, this workshop, which was aimed at developing a Canada-wide OPH research schedule, set the scene for action. Moreover, the introduction of legislative provisions unique to Québec on psychological harassment has put additional pressure on the occupational injury compensation plan. From now on, employers are obliged to use reasonable measures to prevent any type of psychological harassment.

GATHERING KNOWLEDGE AND COMPETENCIES

A day of reflection was organized in order to better identify the limitations and future outlook for OPH research and to help develop a typical Québec research schedule. Based on the theme *La recherche en SPT au profit des individus et des organisations (OPH research for the benefit of individuals and organizations)*, this day brought together some fifty people, mainly researchers from varied disciplines from universities and research centres. This reflection exercise provided additional insight, allowing for a better documentation of our internal strategy and thereby ensuring that the IRSST would make a substantial scientific contribution to OPH and that the results would be useful for workplaces.

TOOLS

In addition to representing major human costs (distress, hopelessness, physical disorders, etc.) and financial costs (absenteeism, loss of productivity, rise in insurance premiums, etc.), OPH problems also raise medical difficulties when it comes to making a diagnosis that clearly establishes a link between work and injury. In addition, companies are not always equipped to recognize and prevent symptoms.

To enable workers and organizations to deal better with this problem that is the main reason for the increase in work absenteeism, the Chair in occupational health and safety management and the IRSST launched a prevention kit: *La santé psychologique au travail… de la définition du problème aux solutions (Occupational psychological health… from the definition of the problem to the solutions)*. The author of this kit, Professor Jean-Pierre Brun, has provided workplaces with a simple, accessible tool that promotes better management of this type of injury. Unique in Canada, these pamphlets are a fine example of the concrete results of research subsidized by the IRSST.

YOUTH

The issue of accelerated aging of the workforce has another side: the arrival of young people in the workplace. Untrained and rarely informed about prevention, young people are more vulnerable to work accidents. In Québec, one young worker under age 25 dies every month and nearly 24,000 young people are injured on the job every year. Half of the injuries occur outside the school year, that is, between early May and late September. Even though over 50% of young workers hold part-time jobs, they injure themselves proportionally more often than their older colleagues, who work mainly full-time. These are alarming observations.

To support the CSST, its network and organizations, which are all concerned about the situation of young people at work, the IRSST made this problem a priority in its 2004 action plan. This resulted in the launch of Opération JEUNESST, with the mandate of planning, organizing and implementing a research development strategy on young people and OHS. Three activities have already been initiated with the following objectives:

- Taking stock of current knowledge on young people and OHS;
- Organizing a network of social and scientific partners interested in the issue;
- Disseminating and promoting the IRSST's results on the topic.

TIME FOR TAKING STOCK

One the eve of its 25 years of existence and after having invested over $200 million in research and $42 million in laboratory services to support the action of the OHS network, the IRSST took stock of its activities. As part of a reflection exercise on its development and strategic orientations for the enhancement of research, the IRSST mandated an External Evaluation Committee to assess its productivity and the relevance and quality of its scientific activities.

The chairmanship of the External Evaluation Committee was entrusted to the chancellor emeritus of McGill University, Gretta Chambers, who will be assisted by four other prominent figures:

- Dr. Camille Limoges, recipient of the Armand Frappier award and the Carrière award from the Association de la recherche industrielle du Québec;
- Dr. John Frank, scientific director of the Institute of Population and Public Health – CIHR and founding member of the Institute for Work and Health in Ontario;
- Dr. Jean-Claude André, research director of the Centre national de la recherche scientifique de France, and scientific director of the Institut national de recherche et de sécurité (INRS-France);
- Dr. Gilles Dussault, senior health specialist for the World Bank, responsible for developing training activities for health service managers in African and Latin American countries.

05
May

• An IRSST scholarship recipient, **Mathieu Fournier**, received the first excellence award for his presentation at the annual colloquium of the Centre interuniversitaire de recherche en toxicologie (CIRTOX). He presented the results of a project entitled: *Échantillonnage et analyse des isocyanates émis lors de la combustion de panneaux de bois aggloméré* (Sampling and analysis of isocyanates generated by the combustion of fibreboard), which he carried out at the IRSST under the supervision of Claude Ostiguy and Jacques Lesage of the IRSST, and professor Huu Van Tra of UQAM.

• The IRSST and McGill University presented two lectures on beryllium. First, Dr. Greg Day of the National Institute for Occupational Safety and Health (NIOSH), who conducted studies on the chemical and morphological characterization of beryllium, presented: "Bioavailability of Insoluble Beryllium Particles". Then, Dr. David Deubner, company physician for Brush Wellman Inc., the world's largest producer and supplier of beryllium and its compounds, gave a lecture entitled: "Medical Surveillance in Beryllium Workers: Methods and Results".

• A work session and mini-symposium were dedicated to the advancement of knowledge on the service life of chemical cartridges. Experts, CSST inspectors, consultants and hygienists from joint sector-based associations and the occupational health and safety network took part in these events organized by Jaime Lara of the Safety Engineering team.

• As it is every year, the IRSST was well represented at the annual conference of the Association québécoise pour l'hygiène, la santé et la sécurité du travail (AQHSST) with a booth, ten presentations and the active participation of **Daniel Drolet** and Brigitte Roberge (president of the association at that time) in the organization of the event. Moreover, the AQHSST paid tribute to those persons with 25 years of membership, who included the IRSST's Director of Operations, Alain Lajoie.

• Within the context of the colloquium *La santé et la sécurité du travail au Québec : une collaboration multidisciplinaire* (Occupational health and safety in Québec: a multidisciplinary collaboration), at the 72nd conference of ACFAS, the IRSST presented its 32 postgraduate scholarship recipients for 2004-2005. About one hundred occupational health and safety researchers, Scientific Advisory Board members and IRSST personnel were in attendance.

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- Diane Gaudet participated in the meeting in Italy of representatives of the International Group of Directors of OHS Institutes.

- **Louis Lazure** was appointed director of the IRSST's Safety Ergonomics team. Since 1992, he has handled the development, execution and coordination of research projects within the Occupational Hygiene team.

- Victim of its own success, the colloquium *Sécurité des machines – Analyse des risques associés aux machines* (Machine safety – Analysis of the risks associated with machines) was forced, with three weeks' notice, to move to UQAM, since the IRSST's premises could not accommodate all the people registered. About one hundred preventionists, CSST inspectors, joint sector-based association consultants, consulting firm specialists, consultants, and company representatives signed up for the event.

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July

- Holding of a special scientific advisory board during which the CEO of INRS-France, **Jean-Luc Marié**, presented the French infrastructure for occupational risk prevention.

- The IRSST announced the holding of a major international beryllium research conference, slated to take place from March 8 to 11, 2005, in Montréal. This scientific event would benefit from the support of prestigious partners such as the National Jewish Medical and Research Center and the National Institute for Occupational Safety and Health (NIOSH) of the United States. The organizers were expecting some 200 researchers, physicians, hygienists and stakeholders concerned with the health problem related to the use of beryllium in the workplace.

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Building for tomorrow

The main asset of a research institute is without question its human resources. As the cornerstone of the organization, its personnel have acquired innovative and sometimes original expertise over the years, which must be passed on. At the same time, the Finance and Administration Division must provide the organization with competent resources in order to meet current needs. It must also draw up a game plan so as to be prepared to meet future requirements. The challenge: to ensure a constant upgrading of competencies and the addition of new blood in order to be able to satisfy increasingly numerous and diversified requests, while limiting the loss of expertise caused by retirements.

In addition to devoting energy to updating human resources management policies and procedures and improving the IRSST's efficiency, the Finance and Administration Division welcomed a new manager and recruited about twenty people in 2004 to meet traditional or occasional needs.

This group includes researchers, professionals and technicians.

1. **Guillaume Lessard**: technician – Laboratory Services and Expertise · **Louise Racine**: technician – Laboratory Services and Expertise · **Mélanie Fournier**: social research technician

2. **Élyse Poulin**: human resources advisor · **Alain Chevrolat**: computer technician

3. **Stephanie Viau**: scientific professional – Laboratory Services and Expertise · **Julie Hudon**: scientific professional – Occupational Psychological Health · **Marie Laberge**: scientific professional · Opération JeuneSST

4. **Marie Lauzon**: administrative assistant · **Erik Pena Salazar**: research assistant – Safety Ergonomics

5. **Jean-François Godin**: researcher – Work Organization · **Hugues Nélisse**: researcher – Safety Engineering · **Yuvin Chinniah**: researcher – Safety Engineering

Among the means that it has at its disposal to deal with the difference between research needs and the number of researchers available, the IRSST manages a graduate OHS scholarship program. Since 1980, more than 800 scholarships totaling $13 million have consequently been awarded to young promising candidates at the master's, Ph.D. and post-doctoral levels in order to stimulate their interest in devoting themselves to the prevention of industrial accidents and occupational diseases or the rehabilitation of workers.

Intramural work

In order to offer its personnel a safe, stimulating and secure work environment, the IRSST finalized the reorganization of its premises, completed the modernization of the furniture, and installed an integrated system aimed at increasing the security of its staff and physical assets and protecting the integrity of personal information and confidential data, while ensuring better control of visitors' comings and goings. Other major investments have been earmarked for leasehold improvements and purchases of high-tech equipment.

SAFETY-ENGINEERING MODELED ON REALITY

Carrying out risk analyses, performing lockout tests, modifying control systems—in short, integrating various safety aspects into an industrial machine and then conducting further tests to find the optimal solution, all without any disruption in workplace operations—this was the idea behind the reorganization of the Safety Engineering team's machine safety laboratory. At the end of 2004, a few wall relocations created one single laboratory from the two small existing ones. An industrial plastic injection press was included with the metal press, which served mainly for work on the two-hand controls and on a system for measuring press stopping times. Members of the Safety of Industrial Tools, Machines and Processes research field therefore have access to the first elements of what could become a small plant laboratory.

ERGONOMICS LABORATORY WITH A THOUSAND POSSIBILITIES

Other work also modified the geometry and volume of the ergonomics laboratory, removing obstacles that prevented optimum use of its equipment. The biomechanists of the Safety Ergonomics team who use the stadimeters, dynamometers, force platform and Optotrak cameras found in this laboratory can now position all these devices more rapidly and effectively. This new installation will allow laboratory research to be conducted, but also, and above all, tools to be developed for research carried out in the workplace. It is also in this laboratory that a one-of-a-kind triaxial dynamometer will be built for measuring lumbar efforts involving complex postures. The latter will help consolidate the team's scientific leadership and its competitiveness in research.

NEW SPECTROMETER IN THE LABORATORIES

Laboratory Services and Expertise is acquiring a second inductively coupled argon plasma mass spectrometer (ICP-MS), an instrument that can analyze a vast number of trace elements. Its purchase became necessary mainly due to the increase in new analytical requirements, in quantity, diversity, sensitivity and speciation. This instrument is being increasingly used in analytical reference methods such as those of the American Society for Testing and Materials (ASTM), the International Organization for Standardization (ISO), and the Environmental Protection Agency (EPA). It makes it easier to control and manage the increase in analytical load in the sector of environmental and biological analysis of metals. With it, the IRSST's laboratories can maintain a high-quality analytical performance.

08 August

- Following his appointment as chairman of the board of directors and CEO of the Commission de la santé et de la sécurité du travail (CSST), **Gérard Bibeau** assumed his duties. By virtue of this appointment, Mr. Bibeau automatically becomes chairman of the board of the IRSST.

- The IRSST promoted research at the annual conference of the Association of Workers' Compensation Boards of Canada in Whitehorse in the Yukon.

09 September

- Produced by the AQHSST, the *Manuel d'hygiène du travail : du diagnostic à la maîtrise des facteurs de risques* (Industrial hygiene manual: from the diagnosis to the control of risk factors) came off the presses, the result of a huge undertaking involving specialists from various disciplines in the writing of the manual's 38 chapters. Nineteen people from the IRSST collaborated on this work, including Brigitte Roberge and Marc Baril, who sat on the writing and editing committee.

- A student at Laval University and an IRSST scholarship recipient, **Steve Dutil** tied for the Jean-Paul Lussier award for his poster presentation of his work on bioaerosols in dental offices. This award is granted by the Réseau de recherche en santé buccodentaire of the *Fonds de la recherche en santé du Québec*.

10 October

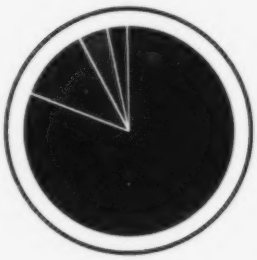
- "Agriculture and partnership" was the theme of the third meeting of the Bioaerosol research action group, an event organized by **Jacques Lavoie** of the Occupational Hygiene team, and involving some thirty microbiologists, biologists, agronomic engineers, agronomists, notably from the Institut de recherche et de développement en agroenvironnement du Québec and from Agriculture and Agri-Food Canada, as well as managers interested in the topic.

Overview of the IRSST

The IRSST team is made up of about 134 individuals, including scientific personnel consisting of some 86 researchers, professionals and technicians from various disciplines including ergonomics, industrial hygiene, chemistry, physics, engineering, sociology, anthropology, and demography. Coordinated by the Operations Division, internal research personnel belong to one of the following five teams: Safety Ergonomics, Work Organization, Safety Engineering, Occupational Hygiene, and Laboratory Services and Expertise. Funded research projects are coordinated by scientific advisors on the Customer Service team. Quality and ethics are the responsibility of the Quality and Special Projects Management team. The IRSST's external network consists of some 300 researchers from universities, research centres and private firms.

FINANCING

REVENUES $21,456,795



- CSST_81.28%
- Laboratory services_11.33%
- External contracts_4.40%
- Other_2.99%

EXPENSES $21,456,795

- Internal research_42.48%
- External research_19.51%
- Finance and administration_11.30%
- Laboratory services_11.17%
- Communications_4.50%
- External contracts _4.40%
- Management_3.47%
- Customer service and technical support_3.17%

ORGANIZATIONAL CHART

Board of Directors
Gérard Bibeau, Chairman

Executive Committee
Gérard Bibeau, Chairman

President and CEO
Diane Gaudet

Scientific Advisory Board

Quality and Special Projects Management
Jean-Claude Martin

Finance and Administration
Jean-Guy Martel

Financial Resources
Louise Lafontaine

Human Resources
Jean-Guy Martel

Information Technologies
Jacques Roy

Physical Resources
Jean-Guy Martel

Operations
Alain Lajoie

Customer Service
Alain Lajoie (acting)

Work Organization
Denise Granger

Safety Ergonomics
Louis Lazure

Safety Engineering
Paul-Émile Boileau

Occupational Hygiene
Nicole Goyer

Laboratory Services and Expertise
Jacques Lesage

Communications
Jacques Millette

11
November

- The information technologies subcommittee of the CSST's board of directors approved the findings of a study conducted by the Information Technologies team regarding the review of our administrative systems.
- The science journal *PISTES – Perspectives interdisciplinaires sur le travail et la santé* celebrated its fifth anniversary. On this occasion, a new thematic issue on training was launched. This electronic journal has an average monthly readership of 22,000. Several scientists from the Institute collaborate on this magazine, including the editor, **Esther Cloutier**.

12
December

- Diane Gaudet agreed to chair the International Committee of the International Social Security Association (ISSA) for education and training for prevention. The ISSA International Education and Training Committee promotes and monitors the activities of the Québec City protocol for the integration of occupational health and safety competencies into vocational and technical education, adopted in October 2003.
- Under the direction of **Jacques Roy**, the Information Technologies team completed the development of a new version of LIMS (Laboratory Information Management System) in order to support electronic exchanges with the Système d'information en santé au travail (SISAT, Occupational Health Information System). This interactive system allows the health network to e-mail us laboratory analysis requests and to receive results more rapidly.

BOARD OF DIRECTORS AND SCIENTIFIC ADVISORY BOARD

The **Board of Directors** determines the IRSST's orientation, development framework and funding.

In 2004, the IRSST's Board of Directors met eight times.

CHAIR
Gérard Bibeau

WORKER REPRESENTATIVES

Michel Arsenault
Andrée Bouchard
Pierre Dupuis
Claude Faucher
Jean Lavallée
Henri Massé
Roger Valois

EMPLOYER REPRESENTATIVES

François Cliche
Franco Fava
Gaston Lafleur
Sylvain Lebel
François-E. Pelletier
Jean-Paul Robin
Gilles Taillon

OBSERVER

Anne Parent

IRSST MANAGEMENT

Diane Gaudet

The **Scientific Advisory Board** advises the president and chief executive officer. Its mandate is to assess the relevance, importance and scientific quality of internal and external research projects and programs.

In 2004, the members of the Scientific Advisory Board met 10 times (eight regular meetings and two special meetings).

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Jean-Marc Brodeur
Christine Colin, PhD
Mireille Mathieu, PhD
Yves Rousseau, PhD
Charles Terreault

OBSERVERS

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Alain Lajoie

Jean-Marc Brodeur, Roger M. Laporte and Serge Trudel had their mandates on the Scientific Advisory Board renewed for a three-year period.

- The IRSST's personnel were saddened to learn of the death of Roger P. Langlois, collaborator from the very beginning. Director General of the École Polytechnique from 1970 to 1982, this engineer by training participated in the IRSST's very first Scientific Advisory Board. He was also the first director of the Safety Engineering program in 1982, in addition to contributing, a few years later, to the implementation of the Safety Ergonomics program.

- Dr. Léon Tétreault, another of the IRSST's original collaborators, has died. A medical doctor, Dr. Tétreault sat on the IRSST's Scientific Advisory Board for two years, in 1984 and 1986, while he was clinical research consultant at the Centre hospitalier universitaire de Sherbrooke.

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List of publications

(Behind the projects either carried out or financed by IRSST)

IRSST PUBLICATIONS

All IRSST publications are peer reviewed

ATALLA N., AMEDIN C.K., ATALLA Y., PANNETON R., SGARD F. *Développement de nouveaux matériaux absorbants à hautes performances acoustiques pour diminuer le bruit en basses fréquences*, Études et recherches / Rapport R-370, 2004, 85 pages.

BARIL D.,NADEAU S., BELLEMARE M., BRUN J.-P. *Intervention externe en santé et en sécurité du travail : un modèle pour comprendre la production de transformations à partir de l'analyse d'interventions d'associations sectorielles paritaires*, Études et recherches / Rapport R-367, 2004, 287 pages.

BENZAAZOUA M., FALL M., OUELLET S. *Étude pluridisciplinaire visant à mettre au point un outil expert pour la prédiction du comportement des remblais en pâte*, Études et recherches / Rapport R-390, 2004, 28 pages.

BOILEAU P.-É., RAKHEJA S., WANG S. *Étude des mécanismes de conception visant à limiter l'importance des impacts occasionnés par le talonnement des sièges à suspension*, Études et recherches / Rapport R-368, 2004, 57 pages.

BRUN, J.-P. *Accroître les efforts de prévention : La santé et la sécurité du travail dans la construction au Québec*, Études et recherches / Rapport R-358, 2004, 48 pages.

CARRIER G., BOUCHARD M., NOISEL N., BONVALOT Y., FRADET S. *Impacts d'un abaissement de la valeur d'exposition admissible au formaldéhyde - Impacts de l'exposition au formaldéhyde sur la santé humaine*, Études et recherches / Annexe RA1-386, 2004, 126 pages.

CHARLEBOIS D., GERVAIS M., LEDOUX É. *Réalisations d'entreprise en prévention : la mise sur pied d'un répertoire*, Études et recherches / Rapport R-383, 2004, 83 pages.

DELISLE A., PLAMONDON A., DESJARDINS P., SALAZAR E., GAGNON D., LARIVIÈRE C. *Évaluation de la contrainte au dos en milieu de travail : développement préliminaire d'une méthode visant à déterminer la cinématique tridimentionnelle du corps humain à l'aide d'un minimum de caméras vidéos*, Études et recherches / Rapport R-388, 2004, 53 pages.

DELISLE A., DURAND M.-J., IMBEAU D., LARIVIÈRE C. *Suivi de deux interventions visant la prévention des troubles musculosquelettiques aux membres supérieurs en milieu de travail*, Études et recherches / Rapport R-379, 2004, 71 pages.

DIONNE C., BOURBONNAIS R., FRÉMONT P., ROSSIGNOL M., STOCK S. *Le pronostic occupationnel des travailleurs aux prises avec des affections vertébrales*, Études et recherches / Rapport R-356, 2004, 148 pages.

DUCHAINE C., CORMIER Y., MÉRIAUX A., PAGEAU P., CHABOT M., ISRAËL-ASSAYAG É., GOYER N., CLOUTIER Y., LAZURE L. *Santé respiratoire des travailleurs et qualité de l'air des tourbières du Québec possédant des systèmes de dépoussiérage*, Études et recherches / Rapport R-363, 2004, 136 pages.

GAGNÉ N., MASSÉ S., TURCOT D., GIRAUD L., SIRARD C. *La sécurité des cardes - Identification des risques et exploration des possibilités d'amélioration*, Études et recherches / Rapport R-377, 2004, 170 pages.

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Production: IRSST, Communications Division
Coordination: Linda Savoie
Editor: Jacques Millette
Photographs: Dominique Desjardins
Translation: Le dernier mot and Traduction Helen Shaver
Graphic Design: Samarkand

ISBN 2-550-44363-2
ISSN 0820-8409

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